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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,704	11/10/2003	Nathan E. Stacy	2039.017800	5242

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EXAMINER

TESKIN, FRED M

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/705,704	STACY ET AL.	
	Examiner	Art Unit	
	Fred M. Teskin	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 15-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-12, 15-19 and 25-28 is/are allowed.
- 6) ☒ Claim(s) 20 is/are rejected.
- 7) ☒ Claim(s) 21-24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>040705</u> | 6) <input type="checkbox"/> Other: _____ |

M

The reply of June 20, 2005, has been entered in full, leaving claims 1-12 and 15-28 pending and under examination. The objection and Section 112 rejection set forth in the prior Office action have been obviated by appropriate amendment of the involved claims.

The previously indicated allowability of claim 20 is withdrawn in view of the newly discovered prior art to Ma et al. A rejection based on the new reference follows.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 20 is rejected under 35 U.S.C. 102(b) as being anticipated by US 5412031 to Ma et al.

Claim 20 is drawn to a monovinylarene/conjugated diene block copolymer, comprising the structure:

(B/S)-B-CA,

wherein (B/S) is a random monovinylarene/conjugated diene block; B is a conjugated diene block; CA is a coupling agent residue; and – is a covalent linkage between blocks.

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The patent to Ma et al describes a multi-arm elastomeric block copolymer comprising the self-same structure. See in particular the $(A'-B)_mY$ structure described in column 3, lines 30-47 and note that (i) A' comprises a random copolymer of a monoalkenylarene and a conjugated diene, (ii) B comprises a conjugated diene homopolymer or polymer of two or more conjugated dienes, (iii) Y is a residue of a multifunctional coupling agent and (iv) m represents the number of arms and is at least three. Star block copolymers having the same general structure also are prepared in Example 2; in the described structures, A is a random styrene/isoprene copolymer endblock, B an isoprene homopolymer, and Y the residue of divinylbenzene coupling agent (per col. 9, lines 1-2, 47-48 and 55-57).

As to the "CA" parameter, examiner notes that applicants' specification defines "coupling agent" to include multifunctional species (see, e.g., page 8, lines 25+) and therefore construes claim 20 as readable on structures wherein multiple (B/S)-B-segments are covalently linked to the coupling agent residue, CA, as in the Ma et al structures.

Accordingly, claim 20 is deemed to lack novelty as fully met by Ma et al.

Claims 21-24 are objected to as being dependent on a rejected base claim but would be allowable if rewritten in independent form to include all the limitations of the base claim and any intervening claim. The provision of a second block or second structure as defined in claims 21 and 22-24, respectively, covalently linked to the (B/S)

block of the structure recited in claim 20, is neither taught nor fairly suggested in any prior art documents located or identified to date.

Claims 1-12, 15-19 and 25-28 are allowable over the prior art of record.

The following is a statement of reasons for the indication of allowable subject matter: The International Search Report dated March 7, 2005 cites WO 02/057386 and US 4122134 as of particular relevance with respect to claims 1-11 and claims 1-4, 10 and 11, respectively. However, for at least the following reasons, neither citation is being applied in any rejection herein.

Claim 1, the broadest of the noted claims, stipulates a monovinylarene/conjugated diene block copolymer comprising, *inter alia*, "a random (conjugated diene_x/monovinylarene_y)_m block, where x is about 2.5 wt% to about 10 wt%, y is about 90 wt% to about 97.5 wt % ..." and "m is from about 70 wt% to about 80 wt%".

WO '386 teaches a block copolymer wherein an A block may contain minor amounts of comonomers other than an aromatic vinyl compound, e.g., up to 5 wt% of a copolymerizable monomer such as butadiene and/or isoprene (p. 4), but nowhere mentions or implies a *random* distribution of the monomers (diene and aromatic vinyl compound) in that block. Moreover, WO '386 requires the proportion of bound aromatic vinyl compound in its block copolymer to be in the range of 10-50 wt%, based on the total block copolymer (p. 5). In the claimed invention, the lower limit on

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monovinylarene content of the random (conjugated diene_x/monovinylarene_y)_m block is about 90 wt%, and the overall block copolymer must contain a minimum of about 70 wt% (lowest "m" value) of said random block. This means the total bound monovinylarene content of the claimed block copolymer necessarily exceeds that taught by WO '386.

Regarding US '134, there is no direct teaching of the relative proportions of conjugated diene and vinyl aromatic compound in the random copolymer segment of the block copolymer resin disclosed therein. It is stated that the random copolymer segment is formed by continuously feeding to the polymerization system a monomer mixture of vinyl aromatic compound and conjugated diene in a fixed ratio in the range of 0.1 to 3.0 (col. 2, lines 44-48). However, it appears from all the working examples that the use of such a monomer mixture leads to random copolymer segments wherein the relative amounts of conjugated diene and aromatic vinyl compound are substantially higher and lower, respectively, than the corresponding amounts embraced by claim 1; e.g., copolymerization of 62.5 g styrene and 37.5 g butadiene in Example 5 (2nd and 4th stages). The other examples similarly appear to add butadiene and styrene in such proportions as to yield copolymer segments compositionally diverse from the random conjugated diene/monovinylarene block of the presently claimed invention.

In view of the new grounds of rejection not necessitated by amendment, this action is made non-final.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner F. M. Teskin whose telephone number is (571) 272-1116. The examiner can normally be reached on Monday through Thursday from 7:00 AM - 4:30 PM, and can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The appropriate fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FMTeskin/08-26-05



FRED TESKIN
PRIMARY EXAMINER
1713